

## CLAIMS

We claim:

- 1    1.     A silicon-on-insulator semiconductor device comprising a source, a drain, a first  
2    gate having a first thickness, and a body contact formed in a substantially coplanar  
3    semiconducting substrate, wherein said source and said drain are separated from said  
4    body contact by an insulator, said insulator not forming a part of said gate.
- 1    2.     The invention of claim 1 wherein said first gate is replaced with a second gate  
2    having a second thickness, said second thickness greater than said first thickness, said  
3    second gate comprising said insulator.
- 1    3.     The invention of claim 1 wherein said insulator has a lower dielectric constant  
2    than said first gate.
- 1    4.     The invention of claim 1 wherein said insulation comprises an isolation material,  
2    said isolation material surrounding said semiconductor device.
- 1    5.     The invention of claim 4 wherein said isolation material comprises a STI trench.
- 1    6.     The invention of claim 1 wherein said insulator comprises a layer of insulation  
2    with no gate conductor on said insulation.
- 1    7.     The invention of claim 6 wherein said layer of insulation comprises a layer of  
2    oxide or nitride.

1 8. The invention of claim 6 wherein said layer of insulation is immediately adjacent  
2 to said gate conductor.

1 9. The invention of claim 1 wherein said insulator comprises spacers which interrupt  
2 continuity of silicide.

1 10. The invention of claim 9 wherein said spacers are continuous with spacers  
2 extending adjacent edges of said gate conductor.

1 11. The invention of claim 1 further comprising a metal layer shorting said body  
2 contact to either said source or said drain.

1 12. A method for making a body contact in a silicon-on-insulator transistor, said  
2 method comprising the steps of:  
3 placing a shallow trench isolation on a substrate between regions of an SOI layer;  
4 depositing a gate conductor over a portion of said substrate;  
5 applying a first dummy gate mask over a first portion of said gate conductor;  
6 etching said gate conductor such that said gate conductor not comprising said first  
7 portion of said gate conductor is removed;  
8 depositing an insulator on said substrate;  
9 polishing said insulator;  
10 applying a second gate mask over a second portion of said gate conductor;  
11 etching said gate conductor such that said gate conductor not comprising said  
12 second portion of said gate conductor is removed;  
13 depositing spacer portions on said substrate such that said spacer portions isolate  
14 said second portion of said gate conductor and said insulator from the rest of said  
15 transistor;  
16 depositing charged implants in said substrate.

1 13. The method of claim 12 wherein said insulator is an oxide.

1 14. The method of claim 12 wherein said insulator is a nitride.

1 15. A method of reducing capacitance in a silicon-on-insulator transistor, said  
2 transistor having a source region, a drain region, a body-contact region, and a gate  
3 connecting said source region to said drain region, said method comprising the step of  
4 isolating said body-contact region from said source region and said drain region.

1 16. The method of claim 15 wherein said step of isolating said body-contact region is  
2 accomplished by replacing a portion of said gate with an insulator.

1 17. The method of claim 15 wherein said step of isolating said body-contact region is  
2 accomplished by substituting, during fabrication, an insulator for at least a portion of said  
3 gate.

1 18. The method of claim 15 wherein said step of isolating said body-contact region is  
2 accomplished by forming a thick layer of insulative material between said gate and said  
3 body-contact region.

1 19. The method of claim 15 wherein said step of isolating said body-contact region is  
2 accomplished by forming, during fabrication, a gap between said body-contact region and  
3 said source region and said drain region.

1 20. The method of claim 19 wherein said gap is created by preventing the formation  
2 of conductive material in a region between said body-contact region and said source  
3 region and said drain region.

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